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The Relationship Among Lifestyle, Self-Esteem, And Body Mass Index In Children

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THE RELATIONSHIP AMONG LIFESTYLE, SELF-ESTEEM, AND BODY MASS INDEX IN CHILDREN

by

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Abstract

Current research demonstrated that childhood obesity has dramatically increased, especially in the rural South. Current research suggests that 25% of children are currently obese while there has been a 75% increase in relative obesity in children over the past three decades. A correlational, descriptive design was utilized to examine the following hypothesis: There will be a significant correlation among the variables of self-esteem, lifestyle, and body mass index in children. The purpose of this study was to determine if a significant correlation exists among body mass index, lifestyles, and self-esteem in children. Erickson, Tomlin, and Swain's Modeling-Role Modeling Theory was the theoretical framework that guided this study. The sample (N = 51) consisted of middle-elementary students in a rural northeast Mississippi school. Permission was obtained from the school principal to conduct the study. Perceptions were assessed using the Rosenberg Self-Esteem Scale and the researcher-developed Stroupe Lifestyle Assessment Survey. Pearson r correlations were used to answer the

research hypothesis. Responses indicated there was no significant difference in mean body mass between male and female participants. However, the males had a higher lifestyle score than females as well as a higher self-esteem score, indicating a more positive lifestyle for males as well as a more positive sense of self-esteem. Based on findings from the study, several nursing practice recommendations were made. The nurse should perform routine assessments of levels of self-esteem among children and educate overweight children and families regarding the problems and issues that overweight children experience.

Dedication

This thesis is dedicated

to the memory of my mother,

Mary Ellen Towery

Her absolute conviction that I could accomplish anything I desired has kept me crossing life's hurdles. Her positive attitude helped me realize that, no matter how bad things seem, there is always a brighter tomorrow around the corner. Without her unconditional love and support in my early years, I could not have accomplished my goals or had the ability to deal with disappointment. This gift of optimism has been her legacy to me and one I dearly hope to share with others.

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Chapter I

The Research Problem

Childhood obesity has shown a dramatic increase in incidence, especially in the rural South. Current research suggests that 25% of children are currently obese while there has been a 75% increase in relative obesity in children over the past three decades. Separate areas of research indicate that obesity in children may be related to both external factors, such as exercise and nutrition, and to more subtle factors, such as self-esteem and feelings of worth. No studies were identified that explores the possible interrelationship among these variables.

In 1998 the World Health Organization designated obesity as a global epidemic (World Health Organization, 1998). The epidemic, which includes adults and children, is a result of societal and environmental factors that promote weight gain. Unfortunately, childhood obesity is a phenomenon whose incidence is increasing at an alarming rate rather than decreasing. Childhood is a time of both physical and psychological development. Obesity can have a

negative impact on development of self-esteem. Obesity is a global health hazard that is associated with many serious health issues in children, such as hypertension, diabetes, heart disease, asthma, arthritis, and many others. Obesity also has a profound effect on poor self-image in children along with social stigmatization. The current researcher sought to evaluate the strength of the relationship among childhood obesity, self-esteem, and lifestyles.

Establishment of the Problem

Results of obesity treatment programs at obesity clinics have been disappointing, although children demonstrate better results than adults. Prevention is therefore essential to reduce the health burden of obesity on society. It is vital to treat and prevent obesity in childhood. Lifestyle behaviors that contribute to and sustain obesity in adults are less well-established in children, therefore may be more amenable to change. The evidence suggests that the family provides a suitable environment for treatment and prevention of further weight gain. Schools present a convenient opportunity for population-based prevention strategies, as long as overweight children are not stigmatized as a result of these strategies (Edmunds, Waters, & Elliott, 2001).

In 1999 the National Health and Nutrition Examination Survey's (NHANES) initial results indicated that an estimated 13% of children age 6 to 11 years and 14% of adolescents ages 12 to 19 years were overweight. The results of these studies were compared to earlier surveys to assess changes in overweight children and adolescents. These comparisons indicated that the rate of increase of overweight children and adolescents were relatively stable from the 1950s to 1980. From 1980 to 1994 the prevalence of overweight children ages 6 to 11 years increased from 7% to 11%, and among adolescents ages 12 to 19 years increased from 5% to 11%.

One of the objectives of *Healthy People 2010* is to reduce the prevalence of overweight children from the National Health and Nutrition Examination Survey III (NHANES III) baseline of 11% (Centers for Disease Control [CDC], 2002). The NHANES 1999 overweight estimates suggest that since 1994 overweight in youths has not leveled off or decreased but may, in fact, be increasing to higher levels (CDC, 2002). Overweight children highlight other concerns. Evidence from experimental and longitudinal cohort studies demonstrate that overweight children are likely to suffer from psychological problems (Edmunds et al., 2001).

Strauss (2000) identified consequences of childhood obesity that had an impact on self-esteem. The author discovered that over the 4-year period, obese boys, Hispanic girls, and white girls had significantly lower self-esteem levels when compared to their nonobese counterparts by ages 13 to 14. Boys, however, showed only mildly decreased self-esteem, with 14% of obese boys having low self-esteem.

Researchers conducted a study on school children in public schools in Tupelo, Mississippi, that indicated kindergarten, Grades 2, 3, 5, and 8 demonstrated excessive weight levels. Overall estimated prevalence of overweight for the children in these grades in Tupelo, Mississippi, is approximately twice the national average. Race and sex analysis indicated that excess weight levels are high in African-American males and females and white males. The prevalence of overweight in white females was lower than other groups in the study (Keku, 2001).

The focus of health should include effects of obesity on the presenting illness. This issue is often left unaddressed by health care professionals when many medical problems stem from the underlying body mass index (McCarthy, Burg, & Smith, 2002).

One possible reason for the increase in obesity is the perpetuation of an inactive lifestyle involving

sedentary activities. Body mass index (BMI) should be evaluated along with growth and development to assess problems early in children. A sedentary lifestyle can promote elevated BMI as well as poor eating habits. The most logical person to assess and intervene in this age group is the nurse practitioner or school nurse. Although 25% to 30% of children are affected, childhood obesity is underdiagnosed and untreated. All obese children should be screened for cardiac risk factors, as well as for possible orthopedic, dermatologic, and psychologic sequella. Treatment should be initiated when the trend in increasing weight obviously surpasses the trend in increasing height (Moran, 1999). The nurse practitioner is in a key position to address this problem early and to begin education for a healthy lifestyle.

Significance to Nursing

Research concerning possible causes of childhood obesity is a vital part of nursing practice, particularly in the area of prevention of health-related complications. If clear causes of this epidemic are identified, preventive measures could be established and education could be focused on these causes. The prevention of childhood obesity would drastically decrease the incidence of many health-related problems, such as asthma,

hypertension, diabetes, cardiovascular disease, and arthritis. The psychological effects of obesity, such as depression and poor self-image, could also be greatly improved.

Researchers observe that by 6 years of age children understand the social messages that overweight is undesirable, and overweight children may encounter rejection and become socially isolated or develop a distorted body image. Obese children have an increased risk of psychosocial and psychological problems that persist into adulthood (Edmunds et al., 2001). Nurse practitioners can help prevent or decrease the current trend of obesity in children and greatly decrease the physical and emotional impact of this epidemic.

Community leadership as well as health promotion is an important aspect of the nursing role. Nurse practitioners provide an excellent educational resource to the community on the two top indicators for *Healthy People 2010* which are participation in physical activity and the prevalence of obesity and or overweight among the population (CDC, 2002). Since the relationship among obesity, lifestyles, and self-esteem are all examined in this study, the results should be beneficial to help promote awareness of the *Healthy People 2010* objectives.

Theoretical Framework

The theoretical framework utilized for this study was Erickson, Tomlin, and Swain's (1983) Modeling and Role-Modeling Theory (Marriner-Tomey, 1994). These nursing theorists define modeling as the process by which the nurse "develops an image and understanding of the clients world; an image and understanding developed within the client's framework and from the client's perspective" (Marriner-Tomey, 1994, p. 95). In this study, attention was focused primarily upon the modeling aspect of the conceptual model. Successful modeling requires the nurse to accept the client unconditionally. This researcher utilized the concept of modeling by obtaining information about two specific variables related to childhood obesity, lifestyles, and self-esteem. In a supportive, nonjudgmental approach, the investigator collected data to (a) determine whether there is a relationship between these two variables and (b) describe the relationship between those variables should a relationship be found. The investigator modeled the participants' world by collecting and analyzing data about their perceptions of themselves and their lifestyles.

The second major concept of this theoretical framework is role-modeling. Role-modeling is the process by which the nurse plans and implements interventions that

are unique to each client. The findings of this study may be useful on the role-modeling process. Nurses may use this information both to assess the appropriateness of individual lifestyles and to provide anticipatory guidance to individuals.

One concept which is unique to modeling and role-modeling as compared to other nursing theories is that of affiliated-individuation. Erickson, Tomlin, and Swain believe that people need to be dependent on support systems while at the same time developing a strong sense of self. According to this model, in order to be healthy, individuals need to feel a deep sense of both the "I" and the "we" states of being and to perceive freedom and acceptance in both states. According to Erickson (Marriner-Tomey, 1994), the development of a stable identity is the primary developmental task of adolescence. Therefore, affiliated-individualism is a particularly important consideration in any study concerning adolescent health-related behaviors. Previous research has indicated that children with increased BMI have decreased self-esteem and are more likely to have lifestyles that predispose them to obesity (Styne, 1999).

Children who have an increased BMI and decreased self-esteem may not perceive a sense of acceptance as individuals and may succumb to peer pressure or other

influences when making decisions. The findings from this study may be used to support the importance of affiliated-individuation as a significant concept in nursing theory.

Assumptions

The assumptions underpinning this study were as follows:

1. Childhood obesity has reached epidemic proportions in the United States.
2. Body mass index is an effective measurement of obesity.
3. Children are influenced by role models.

Statement of the Problem

There is a correlation among obesity, wellness, and self-esteem in children. Prevalence of obesity in children continues to increase at a dramatic rate. Causes for this increase must be identified before effective prevention can take place. Factors that affect the occurrence of childhood obesity may include sedentary lifestyle, and one of the effects of obesity may be a decreased self-esteem. This study was performed to further examine the variables and to help validate previous findings in regard to whether or not a significant correlation exists among obesity, lifestyle, and self-esteem in children.

Research Hypothesis

There will be a significant correlation among the variables of self-esteem, lifestyle, and BMI in children.

Null Hypothesis

There will be no significant correlation among the variables of self-esteem, lifestyle, and BMI in children.

Definition of Terms

For the purposes of this study, the following terms were defined as follows:

1. *Obesity*

   Theoretical: abnormal amount of fat in the body. Usually 20% to 30% over average weight for his or her age (*Webster's New World Dictionary*, 1999). *Operational:* body mass index (BMI) of $\geq 85^{th}$ percentile.

2. *Overweight*

   Theoretical: extra or surplus weight (*Webster's New World Dictionary*, 1999). *Operational:* body mass index of $\geq 85^{th}$ percentile.

3. *Children*

   Theoretical: a female or male under age 18 years. *Operational:* children within the age range of 9 and 14 years.

4. *Lifestyle*

   Theoretical: a way of life. *Operational:* For the purposes of this study, lifestyle is defined as activity level.

5. *Self-esteem*

   Theoretical: belief in one's self, self-respect (*Webster's New World Dictionary*, 1999).

   Operational: as measured by the Rosenberg Self-Esteem Scale.

Summary

The problem of childhood obesity and its effect on the future of health care is of great concern to our nation. Obesity in children is likely to be a result of a more sedentary lifestyle. Effects from childhood obesity continue into adulthood and result in a poorly adjusted and ill adult. Identifying the possible causes of childhood obesity and focusing on education and changes in lifestyle can prevent detrimental effects. The nurse practitioner should perform an examination of each client's health status in relation to nutrition at each visit. The focus of health should include effects of obesity on the presenting illness. This issue is often left unaddressed by health care professionals when many medical problems stem from the underlying body mass index

(McCarthy et al., 2002). Erickson et al.'s Theory of Modeling and Role-Modeling can guide the nurse practitioner in managing interactions with obese children.

Chapter II

Review of the Literature

A review of the literature revealed that the incidence of childhood obesity has nearly doubled in the past 20 years. Researchers have suggested that two factors responsible for this increase include increased consumption of "fast" food and decreased physical activity. Researchers also suggest that decreased self-esteem in obese children is more prevalent than in nonobese children. The research identified in this review of literature is self-esteem of obese children, prevalence of childhood obesity, management of pediatric obesity in a clinical setting, potential causes of childhood obesity, and finally the economic burden of childhood obesity and management of childhood obesity by health care professionals.

Strauss (2000) determined the consequences of childhood obesity on self-esteem. In addition, the author sought to add to the body of knowledge regarding the social and emotional effects of self-esteem in children who are obese.

The researcher selected a descriptive longitudinal design over a 4-year period. The sample (N = 1,520) included 9- and 10-year-old children born to 17- to 28-year-old mothers who were a part of the National Longitudinal Survey of Youth (NLSY), a Department of Labor-funded study. Obesity was defined as a body mass index (BMI) greater than the 95th percentile for age and gender. Self-esteem was defined as having a Self-Perception Profile for Children (SPPC) score of less than or equal to the 10th percentile for gender. Additional data were collected at age 13 to 14 years using a questionnaire that secured data on emotional well-being, smoking, and alcohol consumption. Data were collected every 2 years.

Strauss (2000) stratified data by sex and race and weighted the sample so that all statistics reflected a national representative sample of black and white children ages 9 to 10 years of age. The NLSY over-sampled blacks, Hispanics, and lower income whites. Data from Hispanic males and females were not weighted in the stratified analysis because of low sample size for obese children. Relative risk of decreased self-esteem was assessed using logistic regression, and 95% confidence intervals were calculated from these regressions.

Strauss (2000) discovered that over the 4-year period, obese boys, Hispanic girls, and white girls had

significantly lower self-esteem levels when compared with their nonobese counterparts by ages 13 to 14. However, boys showed only mildly decreased self-esteem with 14% of obese boys having low self-esteem compared to 9% of nonobese boys (20.7 $\pm$ 3.1 vs. 21.5 $\pm$ 2.6, $p < .01$).

In females, aged 13 and 14 years, the effect of obesity on self-esteem demonstrated a significant increase in white and Hispanic girls compared to black girls ($p < .001$). Hispanic girls who were obese (37%) had low self-esteem ($\leq 10^{th}$ percentile) when compared to nonobese Hispanic girls (9%) ($p < .001$). Obese white girls (34%) had a lower self-esteem when compared to nonobese girls (8%) ($p < .05$). The social and emotional effects of self-esteem in children, both obese (8%) and nonobese, were associated with significantly increased rates of sadness ($p < .001$), loneliness ($p < .05$), and nervousness ($p < .01$). Obese children who demonstrated decreasing levels of self-esteem were significantly more likely to report smoking ($p < .05$) and alcohol consumption ($p < .01$) compared to obese children with increased self-esteem.

Strauss (2000) concluded that obesity and self-esteem were significantly related in white girls, and Hispanic girls had similar decreased levels of changes in self-esteem. The author identified that the relationship in boys was not significant. No other studies have been

conducted to document these effects, and only one other study had assessed longitudinal changes in self-esteem among obese children.

Strauss (2000) determined that early adolescence is a critical period for the development of self-esteem among obese girls and boys. Strauss' research was germane to the current author's study of childhood obesity because the focus is similar. Having Strauss' study as a comparison provides a basis for better understanding of self-esteem in children. Findings also provided a baseline for what is the accepted score for low self-esteem.

In another study (Strauss & Knight, 1999) the influence of the home environment on the development of childhood obesity was explored. This study used a population of 2,913 normal weight children between the ages of 0 and 8 years and followed them over a 6-year period. The researchers examined the roles of race, marital status, maternal education, family income, and parental occupation as well as standardized measures of the home environment (The Home Observation of Measurement of the Environment [HOME]-Short Form) cognitive scores on the development of childhood obesity.

The authors discovered the home environment is a critical factor in the development of childhood obesity. There was a documented greater than twofold increased risk

of developing obesity in children with lower cognitive stimulation compared with those having the highest levels of cognitive stimulation. The increased incidence of obesity remained after correcting for maternal obesity, initial weight-for-height z-score, gender, socioeconomic factors, race, and marital status. The increased risk of childhood obesity associated with lower cognitive stimulation was demonstrated consistently among single mothers and minorities as well as those with the lowest income and education. This finding was particularly important because minority children and children with lower socioeconomic status generally have the poorest home environment and the highest levels of obesity. Although a similar trend was observed in children of non-working parents, scores from children in highly educated families and from professional, working parents, this did not achieve statistical significance (Strauss & Knight, 1999).

The findings of similarly increased risks of obesity in children raised in environments with low and moderated cognitive stimulation suggest that a threshold effect exists in the relationship between cognitive stimulation and childhood obesity; the risk of childhood obesity is decreased only in highly stimulating environments. The authors hypothesize that children raised in stimulating and interactive home environments are more likely to

engage in regular physical activity and less likely to engage in sedentary activities such as television watching. However, an increased amount of television viewing in itself does not account for the increased risk of obesity that was observed; children with the highest HOME cognitive scores had significantly lower rates of obesity even after controlling for the amount of television viewing. Instead, increased television viewing most likely serves as an indicator of overall low levels of physical activity in children with low levels of cognitive stimulation.

Maternal obesity was also a significant factor predicting the development of obesity during middle childhood in this study. The influence of parental obesity on childhood obesity most likely results from a mixture of genetic and environmental influences. Children as young as 3 to 5 years old already demonstrated increased preferences for high-fat foods if their parents were obese. In addition, children of obese parents also demonstrated decreased physical activity.

The researchers also observed a significant inverse relationship between the development of obesity and markers of socioeconomic status, such as family income level, occupational status, and maternal education. Lower socioeconomic status may be related to increased risks of

obesity because of its relationship to decreased physical activity in children. In addition, lower socioeconomic status may also be related to childhood obesity because of less healthy eating patterns. Lower socioeconomic status may also influence the development of childhood obesity through its association with a poorer home environment.

Strauss and Knight (1999) documented a greater than 86% increased incidence of obesity in black children compared with white children over a 6-year period. Although national nutritional surveys have demonstrated the highest prevalence of childhood obesity among Hispanic individuals, rates of obesity have increased most significantly over the last decade among black children. Increased risks of obesity were also observed in single-mother families. However, no relationship was observed between race, maternal education, parental occupation, or marital status, and the incidence of obesity in a multivariate regression model included socioeconomic variables, demographic variables, as well as standardized measures of the HOME-Short Form scores. This suggests that the increased risks of obesity in black families with single mothers, poorly educated families, and nonprofessional families may be mediated through either low-family income or low HOME-Short Form cognitive scores, both of which are common among these groups. Maternal

obesity was the most significant predictor of childhood obesity. The HOME-Short Form cognitive scores and household income were also significant predictors of childhood obesity (Strauss & Knight, 1999).

An important negative finding of this study was that there was no association between family emotional support and the development of childhood obesity. Children who became obese were equally likely to be hugged, kissed, or spanked as children who did not develop obesity. These results suggested that previous studies that have related neglect to childhood obesity may have been confounded by the effects of low income and low levels of cognitive stimulation. Standardized evaluation of the emotional relationships within families may not distinguish between parents who are positive and supportive toward their children and those who are over-enmeshed with their children.

A limitation of this study was the lack of weights and heights of the biological fathers of the children; however, this is unlikely to affect the conclusions of the study because studies of obese women indicate that paternal adiposity has minimal effect on the family environment. In addition, the lack of data on paternal education is unlikely to alter the study results because other measures of socioeconomic status such as income and

occupation are available from the fathers. Finally, the developed obesity in the higher socioeconomic groups (professional parents, highly educated mothers, and high-income families) did not provide enough power to assess smaller effects of the home environment on the development of childhood obesity in these groups. Therefore, it is not possible to make any definitive conclusions about the role of the home environment on the development of childhood obesity in higher socioeconomic groups.

The researchers indicated that children raised in environments with high levels of cognitive stimulation have the lowest rates of developing obesity independent of socioeconomic factors, race, maternal marital status, or maternal BMI. Socioeconomic factors and parental obesity are also important to the development of childhood obesity but are less amenable to change. Future efforts to prevent childhood obesity should explore whether parental education programs can decrease the prevalence of obesity by encouraging more stimulating home environments in young children (Strauss & Knight, 1999).

Keku (2001) studied the prevalence and correlates of childhood obesity in children in a rural Mississippi town. Keku (2001) used a sample size calculation that required 250 randomly selected children from five randomly selected elementary and middle schools. School children (N = 332)

were randomly selected from kindergarten and Grades 2, 3, 5, and 8. School health center files for the fall of 2000 were reviewed for the randomly selected children. Study variables, such as age, race, sex, single or dual parent, weight, and height, were extracted from the folder of each child; 47 files were excluded from the study because of missing study variables; 285 files were included in the study.

Keku (2001) identified that overall prevalence of overweight children (BMI at 95th percentile or higher) in randomly sampled public schools was 22.8%. The researcher reported that overweight children in public school was twice that of the overweight estimates of 11% obtained from the National Health and Nutrition Examination Survey III (NHANES III) from 1988 to 1994 and approximately 13% obtained from NHANES in 1999. Group analysis demonstrated that an estimated 22.4% of children ages 5 to 11 years and 24.6% of adolescents ages 12 to 15 years are overweight. An overall analysis indicated that overweight is higher in males (29.1%) than females (17.2%). Overweight among African-American children (29.1%) is higher than in white children (17.2%). Race-sex analysis by the researcher revealed a higher prevalence of overweight in African Americans (males 29.8%, females 31.6%) and white males (29.8%) than in white females (8.6%). Overweight among the

kindergarten school children was 35.3%. The lowest percent (15.8%) was found in third graders, while second graders were 19.4%, but remained approximately the same in the fifth grade (22.7%) and eighth grade (22.5%).

Keku (2001) also identified that children from single-parent homes showed a 24.2% of overweight. This value is slightly higher than the 21.7% that was observed in dual-parent families. Race (p = .03) was a predictor in the model for children at risk for overweight ($\geq$ 85th percentile). African-American children were at greater risk (OR 1.8, 95% CI [1.03, 313]) of overweight than white children in the study. Sex (p = .0008), race (p = .001), interactions sex and race (p = .02), and sex and age group (p = .03) are predictors of overweight ($\geq$ 95th percentile). Males (OR 1.4, 95% CI [0.87, 2.27]) are more likely than females to be overweight. African Americans (OR 4.9, 95% CI [1.83, 12.6]) are more likely to be overweight than whites. African-American males and females and white males are at higher risk of being overweight than white females. Young males have a lower chance of becoming overweight than others in the group.

Keku's (2001) results revealed excessive weight gain in the public school children in a rural Mississippi town. Overall estimated prevalence of overweight is approximately twice the national average. Race and sex

analysis indicates that excess weight gain is high in African-American males and females and white males. The prevalence of overweight in white females is lower than other groups in the study.

According to McCarthy et al. (2002), the goals for treating obesity should be aimed at medical management, behavioral changes, and weight control. Children and their families need to be reminded that normal weight levels will lead to overall improved health. All families need support in gaining skills as a family which will aid in weight control and in becoming aware of the behaviors which contribute to obesity. The health care provider can make suggestions for instituting small, permanent changes, rather than drastic changes, and the patient can work first on maintaining current weight rather than losing weight, since children's natural growth patterns will often help them to overcome obesity (McCarthy et al., 2002). Sedentary behaviors such as television watching should be limited to one to 2 hours per day. Families should be taught to eat well-balanced meals when dining out, and daily activity should be encouraged in children as they will be more likely to continue in physical activity. This holistic approach to health care should be explained as a lifestyle rather than a one-time event.

The most significant finding from this article was that there is a paucity of evidence-based research on effective interventions. The existing researchers established that most methods of weight loss are unsuccessful over time (McCarthy et al., 2002). Prevention is clearly the best way to deal with pediatric obesity. Prevention should begin as early as possible. One researcher (Gill, 1997) revealed that when a general practitioner gave healthy eating advice to pregnant women and their children, it restricted the rate of obesity to 2% compared to levels of 8% in those who did not receive advice. According to Gill, prevention should start with proper training in terms of breast-feeding, weaning, and diets for toddlers.

Changing the trend of childhood obesity is truly a laudable effort for many reasons. Researchers identified that initial success in pediatric weight loss was associated with long-term favorable changes in the serum-lipid profile and also reduced hyperinsulinemia. Weight loss in children has also shown improvement in "total problems" and psychological health. Clearly, weight loss in children is more successful than in adults over the long-term, and the health benefits of preventing adult obesity are enormous.

Research is also needed to assess effective clinical roles in obesity management and to support the development of evidence-based physician guidelines. Hiddink et al. (1997) reported that physicians in the Netherlands sought nutrition guidance from dieticians 72% of the time and from literature 34% of the time. Clinicians' inabilities to obtain patient education materials related to obesity was a barrier to treatment as well. Clearly, clinicians are struggling to give the best treatment possible in a short period of time. Providing health care providers with clinically-proven guidelines and materials should be a national priority in the fight against obesity (McCarthy et al., 2002).

The amelioration of reimbursement problems which hinder health care professionals will probably be addressed when managed care and private insurance companies come to realize that they will be saving money in the long-term by treating obesity in its earliest stages. Treating obesity in gradual steps with family support should lead the way to finding working and long-term solutions to the growing epidemic of obesity in both children and adults.

Obesity remains the most widespread and severe nutritional problem of children in the United States, with prevalence rates that vary greatly by ethnic group. Rates

are generally highest for Hispanic and Native-American children of both sexes and for African-American girls. Childhood obesity is also a concern among Pacific Islanders and an increasing problem among Asians. Crawford, Story, Wang, Ritchie, and Sabry (2001) discussed the prevalence rates, risk factors, and health consequences of childhood obesity among African Americans, Hispanics, Native Americans, and Asian Americans and describes interventions tailored to these groups. These ethnic groups are not mutually exclusive; for example, the study found persons of Hispanic origin may be of any race.

Crawford et al. (2001) compared the ethnic issue in the epidemiology of childhood obesity and discovered that while childhood obesity may be seen as a marker for high-risk dietary and physical activity practices, recent increases in the prevalence of overweight and obesity among American children are not limited to one age, gender, or ethnic group. This suggests that unique behaviors of the members of various racial or ethnic subgroups of the population are unlikely to be the major contributing factors. Rather, it seems that environmental changes promoting increased energy intake and decreased energy output are occurring and have widespread impact on children from various backgrounds. Although no ethnic group is immune from the current shift in energy balance,

differential rates of overweight seem to exist among ethnic groups.

National probability samples of African-American, Hispanic, and white children in the United States provide clear evidence that white children are at lower risk of being overweight than African-American or Hispanic children. Of concern is the lack of national data on the prevalence of overweight and obesity for Native American and Asian American groups. Also, of concern is the aggregation of racial and ethnic subgroups, which may render prevalence rates meaningless. This possibility is clearly true with some surveys of weight status that combine diverse populations, such as Asians and Pacific Islanders, into one group. The high rates of obesity in African-American, Hispanic, and Native-American children are of concern. Although parental socioeconomic status is associated inversely with childhood obesity among whites, higher socioeconomic status does not seem to protect African-American and Hispanic children against obesity. In these groups, childhood obesity does not seem to be associated significantly with parental income and education.

For African Americans, data from NHANES-II and III revealed a twofold increase in the prevalence of obesity. African-American girls, but not boys, aged 6 to 11 years

and 12 to 17 years experienced higher rates of obesity than whites and Hispanic Americans. Obesity among African-American boys aged 6 to 11 years was slightly more prevalent than among white boys but considerably less prevalent than among Hispanic American boys. Male African-American adolescents aged 12 to 17 years experienced a rate of obesity (12.5%) that was slightly higher than for whites (11.8%) but lower than for Hispanic Americans (14.8%) (Crawford et al., 2001).

Hispanic Americans also have experienced secular increases in the prevalence of obesity. Reports from Pediatric Nutritional Surveillance System (PedNSS) show that the prevalence of obesity for Hispanic American preschoolers, aged 4 to 5 years, increased from 10.6% (1982 to 1984) to 13.2% (1988 to 1994) for girls and from 4.9% to 12.0% for boys. The prevalence of obesity for Hispanic American preschool-aged children is higher than for their white and African-American counterparts: 11.9% in 1995 compared to 8.7% in African Americans and 7.0% in whites (Crawford et al., 2001).

Data from 1990 to present indicate that being overweight among Native-American preschool and school-aged children is widespread. Data from the 1994 PedNSS on more than 50,000 Native-American children aged 2 to 4 years indicated that 12% were overweight. This rate was similar

to the rate for Hispanic children of similar age (12%) but much higher than that for white children (6%). Overall, the studies indicate that obesity in Native-American population seems to begin early in childhood. Even at ages 5 and 6 years, overweight was more than twice as likely in Native-American children as in youth from the general United States population, and obesity was more than three times as prevalent.

There are little data on the health and weight status of Asian Americans compared with other ethnic groups. Although African Americans and Mexican Americans were over-sampled in NHANES-III to improve data reliability, Asian Americans were not. Furthermore, the PedNSS publishes aggregate obesity prevalence rates for Asian Americans in combination with Pacific Islanders, a population with a high prevalence of obesity compared with most Asians. Among adolescents from the Add Health Study, Chinese and Filipino youth experienced a substantially lower prevalence of obesity than whites (Crawford et al., 2001).

Although obesity often is seen as an imbalance between energy intake and expenditure, many factors, genetic and environmental, have been associated with obesity. For example, the rapid increase in obesity rates in Native Americans over the past few generations suggests

that environmental factors are operative in a population that is genetically susceptible to the development of obesity. Obesity in Native Americans is believed to be related to the relative abundance of a high-fat, high-calorie food supply, and a rapid change from an active to a sedentary lifestyle.

Environmental factors may be mediated through adaptive mechanisms that contribute to increased risk for obesity in present or future generations. For example, according to the thrifty gene theory, certain populations that have migrated to affluent industrialized societies are predisposed to obesity because harsh conditions, such as famine, experienced by previous generations resulted in genetic selection for populations with highly efficient (thrifty) metabolisms and, therefore, low metabolic rates.

Another adaptive mechanism theory, the thrifty phenotype hypothesis, suggests that insulin-producing cells of the pancreas and insulin-sensitive tissues in the body adapt in response to poor nutrition during fetal and infant life, resulting in decreased growth in early life at the cost of increased risk for obesity and Type 2 diabetes in later childhood and adulthood. Some have found that lower birth weight increased the risk for subsequent adiposity in childhood. This finding may help explain obesity rates in African-American children because there

is a high rate of low birth weight in the African-American population. Low birth weight also has been observed to be associated with truncal fat deposition in nondiabetic white and Mexican-American adult participants in the San Antonio Heart Study (Crawford et al., 2001).

In contrast, Hediger et al. (1999), using a national sample of 3,129 white, African-American, and Hispanic children aged 3 to 6 years, identified that children born large for gestational age tend to be heavier and fatter after 3 years of age. It is possible that the relationship between birth weight and subsequent obesity follows a U-shaped curve. Given that gestational diabetes may increase the risk for macrozamia and is prevalent among Hispanic women, further research to elucidate the role of birth weight in the development of obesity is necessary.

Native Americans also experience a disproportionately high rate of diabetes during pregnancy. Exposure to the intrauterine diabetic environment seems to be an important determinant of obesity and Type 2 diabetes in Native-American youth. Infants born to Pima Indian mothers who were diabetic during pregnancy were more likely to become obese during childhood than were their siblings born before the full manifestation of their mothers' diabetes. It is speculated that a hyperglycemia intrauterine environment may cause fetal adaptation to an excess of

fuels or nutrients supplied during gestation, thus mediating obesity (Crawford et al., 2001).

Health consequences of childhood obesity include a higher prevalence of Type 2 diabetes and an increased risk for adverse levels of lipids and lipoproteins and hypertension. The effects of recently reported unprecedented levels of childhood obesity on subsequent risk for obesity in middle age are now known until future longitudinal data can be collected. It seems likely, however, that future health consequences of current early and severe childhood obesity will be staggering (Crawford et al., 2001).

Halting the obesity epidemic is a formidable task, but the success in recent decades of drastically reducing childhood under nutrition offers hope and should spur similar action and leadership efforts. Promotion of efforts to reduce excess caloric intake with efforts to increase energy expenditure should receive paramount attention in the design of health programs.

Given the relatively few published obesity-prevention and treatment studies that are designed to address specific cultural issues, it is important to promote the development of culturally appropriate intervention strategies that are shown to be effective among youth of diverse backgrounds. Although the dietary and activity

goals will be similar, parental, family, and community messages and techniques grounded in cultural traditions and norms will be different for each ethnic group. This approach is crucial in the United States due to the increasingly diverse population (Crawford et al., 2001).

Whatever the cause of the increased prevalence of childhood obesity, the resultant economic burden must be taken into account. This escalating cost is the very thing that may bring to the forefront the need for obesity prevention and early treatment.

Wang and Dietz (2002) concluded that the increase in the percentage of hospital discharges with obesity-associated diseases may reflect the medical consequences of the obesity epidemic. Although the numbers of percentage are small, the increases are substantial, especially for obesity (197% increase), sleep apnea (436%), and gallbladder disease (228%). These researchers may suggest that the increasing prevalence of obesity in children and adolescents has led to increased hospital stays related to obesity-associated diseases. The increasing proportion of hospital discharges with obesity-associated diseases in the last 20 years may also reflect the impact of increasing severity of obesity. The higher proportion of hospital discharges of obesity-associated diseases in adolescents than in children for all of the

diseases except sleep apnea may suggest further that obesity complications increase with age.

In the National Hospital Discharge Survey (NHDS) data reviewed for this study, obesity was usually listed as a secondary diagnosis. One potential explanation for this finding is that obesity generally is not a reimbursable diagnosis for medical health benefit. Health care payers may not reimburse hospitalizations for obesity, even when obesity is the disease that causes diabetes, sleep apnea, or gallbladder disease. Therefore, doctors may not list obesity as a principal or even a secondary diagnosis. Lack of reimbursement may delay the treatment of obesity and lead to lost opportunities to prevent obesity-associated diseases. Reluctance to list obesity as a diagnosis may also make our estimates of disease burdens conservative.

The frequency with which other diseases have obesity listed as a secondary diagnosis suggests that obesity may lead to many other medical conditions. Asthma and some mental disorders have been linked to obesity. The frequencies with which obesity was listed as a secondary diagnosis for asthma and for several mental disorders have increased from 1979 to 1981 to what they were in 1997 to 1999. Especially for mental disorders, no discharges listed obesity as a co-morbidity during 1979 and 1981, but by 1997 to 1999, obesity had become a common co-morbidity.

For asthma, the frequency of discharges associated with obesity increased nearly 40%. Outcome of delivery was another common discharge that listed obesity as a co-morbidity during 1997 to 1999. The diagnosis frequency increased from 1.3% in 1979 to 1981 to 4.6% in 1997 to 1999. All of the patients in this category were girls 15 to 17 years of age with single live births. This increase may reflect the contribution of obesity to pregnancy complications and adverse pregnancy outcomes, such as cesarean delivery and pregnancy-induced hypertension (Wang & Dietz, 2002).

The length of stay for discharges associated with obesity were longer than that for overall discharges. Discharges with a principal or secondary diagnosis of obesity yielded more days of hospital stay in recent years (1997 to 1999) than in earlier years (1979 to 1981), whereas the days of hospital stay decreased slightly for the overall discharges. When obesity was listed as a principal diagnosis, the average length of stay was twice that of discharges listing obesity as a secondary diagnosis (13.5 days vs. 6.8 days). These data may reflect the time needed to treat obesity or to implement dietary or exercise strategies or the time necessary to implement changes within families. The increased length of stay may also suggest that obesity treatment has become more

complicated in recent years. For example, because of the increasing severity of obesity, more obese individuals may require gastric surgery.

The hospital costs associated with obesity may have risen to more than $127 million per year (in 2001 constant dollars) in recent years. These costs represent more than a threefold increase. As a percentage of costs for overall hospital discharges, obesity-associated costs increased from 0.43% in 1979 to 1981 to 1.7% in 1997 to 1999. The disparity between changes in costs and the changes in prevalence of obesity may reflect the disproportionate increase in severe obesity from the 1970s to the 1990s (Wang & Dietz, 2002).

This study by Wang and Dietz (2002) had several limitations. First, the discharge frequency cannot be used to assess disease prevalence because a person with multiple discharges during a year may be sampled more than once. Second, physicians' awareness of obesity or willingness to list obesity as a diagnosis may change over time. The authors did not consider this effect in analyzing discharge frequency because of lack of information. Third, only four obesity-associated diseases were examined for the trend analysis of diseases, and Type 1 and Type 2 diabetes were not differentiated, although the authors included only discharges that listed both

obesity and diabetes for the analysis of economic costs. Fourth, only discharges with an obesity diagnosis were used to estimate the economic burden of obesity. Therefore, the estimates were probably conservative because many persons with obesity-associated diagnosis may not have a severe enough weight problem for obesity to be listed, or doctors may not have listed obesity as a diagnosis for reimbursement reasons. Finally, only hospital costs were analyzed. Other costs, such as costs for physician visits and medication, and indirect costs, such as the effect of obesity on future earnings are considerable. Inclusion of these costs would further increase the economic burden.

Several strengths of the study by Wang and Dietz (2002) should also be noted. First, because this study used large, nationally representative samples collected over the past 20 years, the authors were able to examine trends and produce national estimates of hospital use and the economic burden of obesity. Although the proportion of obesity-associated discharges was low, the trend of the proportion and its economics costs are accelerating. Second, because principal and secondary diagnoses were available, other major co-morbidities associated with obesity were examined. Finally, although the estimates of diseases and economic costs associated with obesity are

likely to be conservative in absolute values, the data from this 20-year period portray a disturbing increase of hospital diagnoses of obesity-associated diseases and in health care costs.

The increasing frequency of hospital discharges of obesity-associated diagnoses suggests a rising disease burden associated with obesity among children and adolescents. If the prevalence of obesity continues to grow, the disease burden will surely increase further. As overweight children become overweight adults, the diseases associated with obesity and health care costs are likely to increase even more. Because disproportionate weight gains have occurred among heavier children, the rate of obesity-associated diseases will rise even faster if the expanding prevalence of obesity continues. Clearly, both primary and secondary prevention of childhood obesity are required to address this epidemic (Wang & Dietz, 2002).

Summary

In the review of the literature, the researcher has revealed that previous studies have contributed to the understanding of childhood obesity and the relationship of self-esteem and lifestyles. Nonetheless, many questions about the existence and nature of this relationship remain unanswered.

Previous studies have focused on a single aspect such as self-esteem (Strauss, 2000) and or home environment (Strauss & Knight, 1999). While these studies have evoked the need for increased physical activities, the studies have not compared the variables of obesity, self-esteem, and lifestyles. In the current study, the investigator explored the broad dimensions of obesity, self-esteem, and lifestyles.

The review of a study by Keku (2001) revealed that a local rural Mississippi town had twice the rate of obesity as the national rate. This is disturbing news that highlights the need to look at all aspects of the cause of the ever-increasing obesity rate. Review of this literature was valuable in gaining knowledge of childhood obesity rates in rural northeast Mississippi. This is important knowledge because Mississippi leads the nation in obesity rates.

The researcher also included a study by Wang and Dietz (2002) which illustrated enormous escalating costs of care for patients with obesity impacts the economy tremendously. This economical impact may be the driving force to having reimbursement for health care professionals for the prevention and intervention of childhood obesity.

Researchers suggest an association among childhood body weight, lifestyles, and self-esteem. However, further research concerning these variables and the relationship among the variables were explored in the current study.

The nation has a 75% relative increase in childhood obesity over the past three decades, and 25% of children are currently obese. Pediatric obesity has become a modern epidemic of considerable impact. Accelerated prevention activities in community and primary care settings may be the most crucial component to controlling the burden of pediatric obesity in the United States.

Chapter III

The Method

The purpose of this study was to determine the strength of relationships among the variables of self-esteem, lifestyle, and body mass index (BMI) in children. Data obtained from previous research regarding a relationship among lifestyles, both mass index, and self-esteem yielded varying results. Available empirical knowledge reflected conflicting results for the causes and effects of childhood obesity. No studies were identified that explored the possible interrelationships among all three of these variables. In this chapter, methods used to study the variables of interest are identified. The research design, setting, population, and sample are described. The instrument of measurement was discussed as well as the procedure for data collection. Finally, the methods of data analysis were identified.

Design of the Study

Correlational research measures how closely two ratio level variables are related to each other. Descriptive

research is about what and how many of what. A correlation-descriptive design was employed for this study because the researcher sought to examine the interrelationship among body mass index, lifestyle, and self-esteem without implementing an intervention.

Variables

The variables of interest were the lifestyles of the participants, including the self-esteem score on the Rosenberg Self-Esteem Scale and the body mass index of each participant. The accuracy with which the participants answered or understood the questionnaire potentially was an intervening variable.

Setting, Population, and Sample

The setting for this study was a middle-elementary school of a small community in rural northeast Mississippi. Five large manufacturing plants and a community college surround the community and supply most of the employment for the community. Because of this, unemployment has been fairly low, but many of the jobs are of the unskilled or blue-collar type with fairly low wages. Ethnically, the community is composed of 95% Caucasians (whites), 5% African Americans (blacks), and a very small Latino population. In the public middle-elementary school, however, there is only one African-

American child and no Latino children. A large number of children have parents who are not home from work when the children get out of school; therefore, after-school preparation of snack food is at the discretion of the child (Assistant Principal J. Stroupe, personal communication, March 14, 2003).

The target population for the study sample included 50 students age 9 through 14 years who returned a signed informed consent and who were in the classroom chosen by convenience to participate in the research. The study sample (N = 54) was drawn from children who attended the school where the research was being conducted, age range between 9 and 14 years, signed informed consent by both parent or guardian and participant, as well as completion of the lifestyle and self-esteem questionnaire.

Methods of Data Collection

Techniques and instrumentation. The instrument utilized for measuring the variables of this study and for collecting the data was the Stroupe Lifestyle Assessment Scale, a 13-item questionnaire (see Appendix A). The researcher-developed questionnaire contained four items filled out by researcher after obtaining weight and measurement and calculating BMI, four demographic questions filled out by the participant, three questions

which measured activity level (questions 4, 5, 6), and four questions which assessed nutrition (questions 8, 10, 11, and 12), and two questions which assessed lifestyle (Questions 7 and 13). The "grading" for the tool was as follows: For question 4 the desired response was answer "b" which received 4 points. The other options received 1 point. For question 5, the response "none" received no points while all other options received 4 points. For question 6, the desired response was "a" which received 4 points, response "b" received 2 points, response "c" received 3 points, and response "d" received no points. For question 7, responses "a" and "c" received 4 points, response "b" received 2 points, and response "d" received no points. For question 11, response "a" received 4 points, response "c" received 2 points, and responses "b" and "d" received no points. For question 10, the subject identified the top four items they usually like to eat. The range of the score was 0 to 32. The higher the participant scored, the more positive the lifestyle.

The Rosenberg Self-Esteem Scale (see Appendix B) consists of 10 questions measuring self-esteem of the participant. The survey was used to evaluate levels of self-esteem. The instrument was established in 1965, and test-retest reliability was reported as .85. The items consisted of agree or disagree questions, with a higher

number of agreed questions indicating a high level of self-esteem and a higher number of disagree indicating a low level of self-esteem. For items numbered 1, 3, 4, 7, and 10, the higher the score, the higher the level of self-esteem. For the remainder of the items, the higher the score, the lower the level of self-esteem. Each agree response was assigned a score of 2, and each disagree response was assigned a score of 1. This resulted in a range of scores from low to high (10 to 20).

After instructions were provided by the researcher on administration of the questionnaires, a teacher from each class distributed the surveys. The researcher was not present when the questionnaires were completed. Upon completion of the questionnaires, the participants were asked to place the surveys in a slotted box that was provided. The representatives then contacted the researcher who collected the completed data.

The BMI was obtained and documented by the researcher after calculating from height and weight measurements (see Appendix C). The Stroupe Lifestyle Assessment Scale questions were developed based on suggestions from an expert panel and a review of literature. The researcher-developed tool was pretested and was assumed to have face validity within the confines of this study. Additionally, the tool was piloted on three children for clarity and

ease in administration. The Rosenberg Self-Esteem Tool has established validity and, therefore, strengthens the confines of this study.

Procedures. Approval to conduct the study was first obtained from the Mississippi University for Women Committee on Use of Human Subjects in Experimentation (see Appendix D). The researcher appeared in person before the principal of the county school where the study was conducted to explain and describe the study. The study was approved by the school principal, and permission was granted to conduct the study (see Appendix E).

As the next step, the researcher contacted all teachers Grades 4 through 8 in order to arrange a meeting with their students, inform the students about the study, and distribute the student and parental consent forms (see Appendices F and G). The consent forms described the study and measures which would be taken to protect confidentiality. The consent forms were distributed one week prior to the scheduled study visit date. The teachers were instrumental in getting students to return the signed forms to class. Student and parental consent forms were collected prior to giving the lifestyle and self-esteem questionnaires. The researcher explained the written instructions to the students and answered questions. A box was provided in each classroom for the students to place

their questionnaires, face down, after completion. The researcher was the only person other than the students who handled the questionnaires. Each questionnaire was numbered to correspond to a numbered list of names, so each student's questionnaire scores could be analyzed. The researcher was the only person who saw the list, and after the scores were analyzed the list was destroyed.

Methods of Data Analysis

Body mass index for all participants as well as the Stroupe Lifestyle Assessment Scale and the Rosenberg Self-Esteem Scale scores were correlated using Pearson product-moment correlation. This enabled the researcher to determine if a correlation existed between the variables of BMI, lifestyle, and self-esteem, and *t* tests were used to describe additional data. The demographic questions on the Stroupe Lifestyle Assessment Scale were analyzed using demographic statistics including frequency and percentile. Question 10 used the descriptive statistic of ranking. The sum of all correct answers were tallied, and a mean was determined to arrive at a score.

Summary

In this chapter, the design of the current study was discussed. The variables, limitations, setting, population, and instrumentation were presented as well as

the methods of data collection. Finally, the methods of data analysis were identified in order to establish the empiricalization of the current study.

Chapter IV

The Findings

The purpose of this study was to examine the relationship among levels of self-esteem, lifestyle scores, and body mass index in children. The design was a correlational-descriptive design which implied a casual relationship among the variables. In this chapter a description of the sample and analysis of the data in relation to self-esteem, lifestyle, and body mass index are presented. Additional findings are also included.

Description of the Sample

Convenience sampling was utilized to collect data from children. The subjects were participants from a middle-elementary school in rural northeast Mississippi. Of the 51 participants who completed the Stroupe Lifestyle Assessment Scale and the Rosenberg Self-Esteem Scale, 33 (65%) were female and 18 (35%) were male. Of the 51 participants, the height ranged from 50 to 74 inches with a mean of 64.3 inches and a standard deviation of 4.0 inches. Weight ranged from 66 to 220 pounds with a mean of

135.5 pounds and a standard deviation of 35.0 pounds. BMI range was 13 to 34 with a mean BMI of 22.3 and a standard deviation of 4.6. Age of the participants ranged from 11 to 16 years with a mean of 13.6 years and a standard deviation of 0.9 years. The race distribution was 100% white.

Other data were collected on all the participants including how many snacks were eaten daily, if the participants ate lunch at school or at home, the top four snack food choices, who prepared the meals or snacks, how often the participant ate in fast-food restaurants, where the participant usually ate meals, how much time was spent watching TV, and the level of athletic involvement. These findings are depicted in Table 1.

Table 1

Characteristics of the Sample Survey Expressed in Frequency and Percentage

Variable	*f*[a]	%
No. of snacks eaten daily		
None	1	2.0
1 to 3	34	67.0
4 to 5	16	31.0
Lunch eaten at school	50	98.0
Take lunch to school	1	2.0

(*table continues*)

Table 1 (*continued*)

Variable	*f*[a]	%
Top 4 food choices for snacks		
Potato chips	27	53.0
Fruits	24	47.0
Pizza	25	49.0
Soft drinks	45	88.0
Cookies	11	22.0
Vegetables	11	22.0
Sandwich	20	39.0
Diet Drinks	4	8.0
Candy bars	21	41.0
Popcorn	9	18.0
Water	12	24.0

Note. Percentages were rounded to the nearest 10th. The top four items were requested so percentages add to more than 100%.

[a]N = 51.

Data Analysis Related to the Null Hypothesis

Data were analyzed to answer the following null hypothesis: There is no relationship among the variables BMI, lifestyle, and self-esteem in children. The lifestyle

score was determined based on seven survey items that fall under the general categories of activity level and nutrition. Each survey item was coded on a 0 to 4-point scale to generate a single lifestyle score with possible total values ranging from 0 to 28. Higher lifestyle scores correspond to more positive lifestyles, while lower lifestyle scores correspond to less positive lifestyles.

The Rosenberg Self-Esteem Scale was used to determine overall self-esteem for each participant. The survey consisted of 10 items, each with a positive and a negative response option. The overall score is based on 10 items, scoring each on a 0 or 1 basis. The overall self-esteem score has possible values ranging from 0 to 10. High self-esteem scores correspond to a sense of positive self-esteem, while low self-esteem scores correspond to a sense of negative self-esteem. The responses of the 10-item scale are depicted in Table 2.

Table 2

Description of Sample Responses on the Rosenberg Self-Esteem Scale in Relation to Self-Esteem Expressed in Frequency and Percentage

	Agree		Disagree	
Question	*f*	%	*f*	%
1. Satisfied with self	36	71.0	15	29.0
2. I am no good at all	32	63.0	19	37.0
3. I have good qualities	41	80.0	10	20.0
4. I am able to do things	46	92.0	5	8.0
5. I do not have much to be proud of	11	22.0	40	78.0
6. I feel useless at times	29	57.0	22	43.0
7. Self-worth equal to others	42	82.0	9	18.0
8. Self-respect	40	78.0	11	22.0
9. I am a failure	13	25.0	38	75.0
10. Positive attitude toward self	43	84.0	8	16.0

Note. $N = 51$.

Between the variables lifestyle score versus self-esteem score, the correlation coefficient of 0.241 indicates a weak positive linear relationship between the variables. So, as one variable increases, the other variable tends to increase also and vice versa. A summary

of lifestyle scores and self-esteem scores is depicted in Table 3.

Table 3

Lifestyle Scores and Self-Esteem Scores

Score	Range	*M*	*SD*
Lifestyle	5 to 27	15.9	5.1
Self-esteem	0 to 10	6.6	2.2

The Pearson correlation was calculated for each pair of variables among body mass index, lifestyle score, and self-esteem score. For each pair of variables, a hypothesis test was preformed to test the null hypothesis that the correlation coefficient was equal to zero, which indicated no correlation or relationship among the variables. Statistical values are depicted in Table 4.

Table 4

Statistical Values

Variable	*r*	*p*
BMI and lifestyle	-0.262	.064
BMI and self-esteem	-0.277	.049*
Lifestyle score and self-esteem	0.241	.089

*$p < .05$.

For body mass index versus lifestyle score, the correlation coefficient of -0.262 indicates a weak negative linear relationship between the variables. As one variable increases, the other variable tends to decrease.

For body mass index versus self-esteem score, the correlation coefficient of -0.277 also indicates a weak negative linear relationship between the variables. As one variable increases, the other variable tends to decrease.

Performing the hypothesis tests at the 10% significance level, all three results were not statistically significant. The null hypothesis was that the correlation coefficient is equal to zero, so data indicate acceptance of the null hypothesis in each case. Thus, the sample data provide evidence that each pair of variables from among body mass index, lifestyle score, and self-esteem score are related or correlated based on the values of the correlation coefficients.

Additional Findings

The researcher also split the sample data based on gender to compare females and males for differences in each of the variables: body mass index, lifestyle score, and self-esteem score. The difference in the means for body mass index was very small and did not indicate any difference based on gender. For both lifestyle score and

self-esteem score, the difference in the mean was large enough to be statistically significant. The mean lifestyle score for males was higher, indicating a more positive lifestyle than for females. The mean self-esteem score was higher for the males, indicating a more positive sense of self-esteem. For each variable, a t-test was done to assess the differences between the mean. This is depicted in the following tables.

Table 5

Body Mass Index

Variable	*n*	*M*	*SD*
Females	33	22.4	4.7
Males	18	22.2	4.7

Performing a t-test at the 10% significance level, the difference in mean body mass index between females and males is not statistically significant ($p = .89$).

Table 6

Lifestyle Score

Variable	*n*	*M*	*SD*
Females	33	15.1	5.5
Males	18	17.4	4.0

Performing a t-test at the 10% significance level, the difference in mean lifestyle score between females and males was not statistically significant ($p = .09$).

Table 7

Self-Esteem Score

Variable	*n*	*M*	*SD*
Females	33	6.2	2.3
Males	18	7.4	2.0

Performing a t-test at the 10% significance level, the difference in mean self-esteem score between females and males was not statistically significant ($p = .07$).

In this chapter, the results of data analysis for demographics, gender, self-esteem, lifestyle, and body mass index have been presented. The researcher rejected

the null hypothesis in each case. Results of the data will be discussed in detail in Chapter V, The Outcomes.

Chapter V

The Outcomes

The purpose of this study was to determine whether a relationship existed among body mass index, self-esteem and lifestyles in children. Erickson, Tomlin, and Swain's Modeling and Role-Modeling Theory (Marriner-Tomey, 1994) was used to guide this descriptive correlational study. This chapter includes discussion and interpretations in relation to the null hypothesis. Additional findings, implications, conclusions, and recommendations are also included.

The null hypothesis for this study was as follows: There is no relationship among the variables of self-esteem, lifestyle, and body mass index in children. The sample consisted of 51 children from a rural middle-elementary school in northeast Mississippi; the children range in age from 9 to 16 years. Demographic data were collected using the Stroupe Lifestyle Assessment Scale and was analyzed using descriptive statistics. To ascertain the subjects' self-esteem, the Rosenberg Self-Esteem Scale was used. The Pearson product-moment correlation was

utilized to analyze the data. Data were further analyzed using *t* tests.

Summary of Findings

The sample consisted of 51 middle-elementary school students with a mean weight of 135.5 pounds and a mean height of 64.3 inches. The mean BMI of the sample was 22.3 kg/cm^2. Of the 51 subjects, the mean age was 13.6 years. Participants were all Caucasian. Data were analyzed to depict a relationship among body mass index, lifestyle, and self-esteem in children. For body mass index versus lifestyle, the correlation coefficient of -0.262 indicates a weak negative linear relationship between the variables. As one variable increases, the other variable tends to decrease. For body mass index versus self-esteem, the correlation coefficient of -0.277 also indicates a weak negative linear relationship between the variables. As one variable increases, the other variable tends to decrease. For lifestyle score versus self-esteem score, the correlation coefficient of 0.241 indicates a weak positive linear relationship between the variables. As one variable increases, the other variable tends to increase also and vice versa. Therefore, these data lead the researcher to accept the null hypothesis in each case.

In further assessment of the variables of the current study, statistically significant findings emerged. The sample data were split based on gender to look at females versus males for the difference in each of the variables: body mass index, lifestyle score, and self-esteem score. The difference in the mean for body mass index was very small and did not indicate any difference based on gender. For both lifestyle score and self-esteem score, the difference in the mean was large enough to be statistically significant. The mean lifestyle score for males was higher (17.4) than for females (15.1). The mean self-esteem score was higher for males (7.4) than for females (6.2), indicating a more positive sense of self esteem for males. For each variable, a *t* test was conducted to assess the differences between the mean.

The snack choices of the current sample were divided into the top four food item choices with the results showing soft drinks as the most frequent choice at 88%, followed by potato chips at 53%, pizza at 49%, and fruits at 47%. This sample also depicted that 98% of the sample had lunch at the school cafeteria.

The lifestyle score was determined based on seven survey items that fall under the general categories of activity level and nutrition. The current study revealed

that subjects who reported negative self-esteem had larger BMIs than those subjects with positive self-esteem.

The Rosenberg Self-Esteem Scale was used to determine the self-esteem score for each participant. The survey consisted of 10 items, each with a positive or negative response option. The final score was based on these items with scoring on a 0 to 1 basis. High self-esteem scores corresponded with a sense of positive self-esteem, while a low self-esteem score corresponded to a sense of negative self-esteem. In response to having self-respect, 78% agreed and 22% disagreed. In response to "I am a failure," 25% agreed and 75% disagreed; and those having a positive attitude toward themselves, 84% agreed while 16% disagreed.

Limitations

The design of the study imposed certain restrictions in the course of conducting the research limiting the generalization of the findings. The study was conducted using convenience sampling which may not adequately represent the overweight population in children. In addition to the sampling plan, the sample size was small and consisted of all Caucasian children, therefore, limiting generalization.

The tool used to assess global self-esteem was limited in response choices and, therefore, lacked specificity. Because of the sensitive nature of the questions, the responses may not have been truthful or the children may not have understood the question. Other factors may have affected the children's self-esteem other than the variables being measured in this study. Furthermore, the Stroupe Lifestyle Assessment Scale contained subjective inquiries, such as activity level and eating patterns, which may have been misinterpreted by the children.

Conclusions

Based on the results of the study, the following conclusions were made:

1. The self-esteem of the subjects in this research was relatively positive.
2. There was a weak negative relationship between the variables of body mass index and lifestyle in children in this research.
3. There was a weak negative relationship between the variables of body mass index and self-esteem in the children in this research.

4. There was a weak positive relationship between the variables of lifestyle and self-esteem in the children in this research.

Implications for Nursing

A number of implications for nursing emerged from this study. Implications for nursing theory, research, practice, and education are described in this section.

Nursing theory. Nursing theory is tested through research. The appropriateness of using Modeling and Role-Modeling by Erickson, Tomlin, and Swain to investigate the relationship among the variables of lifestyle, self-esteem, and body mass index is confirmed by the results of this study. The investigator modeled the participant's world by asking questions related to daily activities and environment from the participant's perspective.

The investigator attempted to convey an attitude of unconditional acceptance toward the participant both verbally and nonverbally. The nursing theorists state that unconditional acceptance is essential to the modeling process in that it encourages the individuals in the process to be honest and forthcoming. Self-esteem has been shown to be an important factor in psychological as well as physical health. The participants of this research were

forthcoming with their responses. This theory is a solid framework on which to base this research.

Nursing research. The lack of nursing research related to the relationship among the variable of lifestyle, self-esteem and body mass index supports the need for further research in this area. Studies indicate a relationship between body mass index and lifestyle as well as between self-esteem and body mass index. However, no studies were found with all three variables. Previous research has indicated a decrease in self-esteem in children with high BMI (Strauss, 2000). Research needs to be continued in order to provide adequate health care to all children and to focus on health promotion and primary prevention.

Nursing practice. In order to promote health and a positive self-esteem, the nurse practitioner must be knowledgeable and willing to address issues of health related to increased body mass index. With an understanding of the problems and issues that children with increased BMI face, the nurse practitioner can better prepare the child and the parent for a focus on prevention of health problems. The nurse practitioner's knowledge and expertise can be incorporated in all roles of the nurse practitioner. The nurse practitioner has the responsibility to educate and prepare clients and

communities they serve about health promotion and prevention, such as lifestyle, activity levels, and self-esteem to ensure a holistic view of patient care.

Nursing education. Nurse practitioner students should be educated about the problems and concerns for overweight children. Curricula should include the physical and psychological problems with which overweight children must deal. The outcomes the nation as well as the entire world will be faced with for generations to come if the problem of obesity is not dealt with now. Not only will physical illness see a drastic increase due to childhood obesity, but psychological illness may indeed become a factor due to decreased self-esteem. Curricula should include assessment techniques to identify tendencies toward obesity as well as to identify altered levels of self-esteem. Both obesity and self-esteem levels can be an indicator for determining other illnesses. Nurse practitioners should also be taught skills to foster self-esteem in children as well as early intervention with children who have increasing BMI.

Recommendations for Further Research

Based on the findings of this study, the following recommendations were made:

1. Replication of the study with more detailed tools to address self-esteem specific to the school-age child.
5. Replication of the study with a larger sample and a more culturally diverse group.
6. Replication of the study to include the attitude of the teachers toward children with increased BMI.
4. Replication of the study with a more detailed lifestyle tool to better assess activity levels related to BMI.

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APPENDIX A

STROUPE LIFESTYLE ASSESSMENT SCALE

Stroupe Lifestyle Assessment Scale

Subject #_____

Directions: Please complete the following questionnaire by filling in the blanks or by placing a check (✓) by the answers that best describe you. DO NOT SIGN YOUR NAME.

Demographics

Height:_____ Weight:_____ BMI:_____

1. How old are you? _____
2. What is your race?
   - ❒ a. White
   - ❒ b. African American
   - ❒ c. Hispanic/Latino
   - ❒ d. Other
3. Gender
   - ❒ a. Female
   - ❒ b. Male

Activity

4. How much time do you spend playing or exercising such as riding a bike, walking, or playing outside per day?
   - ❒ a. Less than 1 hour/day
   - ❒ b. 1 to 2 hours/day
   - ❒ c. More than 3 hours/day
   - ❒ d. More than 4 hours/day
5. In the past year, how many sports teams or organized exercise programs have you been involved in? Do not include physical education or gym class. Check one.
   - ❒ a. None
   - ❒ b. One
   - ❒ c. Two
   - ❒ d. Three
   - ❒ e. Four

6. How much time do you spend watching TV or playing video/computer games each week?
   - ❒ a. Less than 1 hour
   - ❒ b. 1 to 3 hours
   - ❒ c. 4 to 8 hours
   - ❒ d. Greater than 8 hours

Eating Habits

7. Who gets your food for you at home?
   - ❒ a. Your mother/father
   - ❒ b. An older sister/brother
   - ❒ c. Another adult
   - ❒ d. Yourself

8. How many snacks do you eat each day?
   ❒ a. None ❒ b. 1 to 3 ❒ c. 4 to 5

9. Please check one of the following:
   - ❒ a. I eat at school most days.
   - ❒ b. I take my lunch most days.

10. Please check the top four items you usually eat or drink.
    - ❒ a. Potato chips
    - ❒ b. Fruits
    - ❒ c. Vegetables
    - ❒ d. Candy bars
    - ❒ e. Cookies
    - ❒ f. Sandwich
    - ❒ g. Popcorn
    - ❒ h. Pizza
    - ❒ i. Water
    - ❒ j. Soft drinks
    - ❒ k. Diet drinks

11. Where do you usually eat your meals?
    - ❒ a. Dining table
    - ❒ b. Restaurant
    - ❒ c. In front of the TV
    - ❒ d. Car

12. How many times a week do you eat at a fast-food restaurant?
    - ❒ a. One to two
    - ❒ b. Three or more
    - ❒ c. Four to five

13. How many times a week does your family sit down to a meal together?
    - ❒ a. One to two
    - ❒ b. Three to four
    - ❒ c. Five to six
    - ❒ d. Every day

APPENDIX B

THE ROSENBERG SELF-ESTEEM SCALE

The Rosenberg Self-Esteem Scale

1. On the whole, I am satisfied with myself.

   ____ a. Agree ____ b. Disagree

2. At times I think I am no good at all.

   ____ a. Agree ____ b. Disagree

3. I feel that I have a number of good qualities.

   ____ a. Agree ____ b. Disagree

4. I am able to do things as well as most other people.

   ____ a. Agree ____ b. Disagree

5. I feel I do not have much to be proud of.

   ____ a. Agree ____ b. Disagree

6. I certainly feel useless at times.

   ____ a. Agree ____ b. Disagree

7. I feel that I'm a person of worth, at least on an equal plane with others.

   ____ a. Agree ____ b. Disagree

8. I wish I could have more respect for myself.

   ____ a. Agree ____ b. Disagree

9. All in all, I am inclined to feel that I am a failure.

   ____ a. Agree ____ b. Disagree

10. I take a positive attitude toward myself.

    ____ a. Agree ____ b. Disagree

APPENDIX C

FORMULA FOR BODY MASS INDEX

Centers for Disease Control and Prevention's

Formula for Body Mass Index

$$BMI = \frac{\text{(Weight in inches)}}{\text{(Height in inches) X (Height in inches)}} \text{ X } 703$$

APPENDIX D

APPROVAL OF MISSISSIPPI UNIVERSITY FOR WOMEN'S COMMITTEE ON USE OF HUMAN SUBJECTS IN EXPERIMENTATION

MISSISSIPPI UNIVERSITY FOR WOMEN

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Columbus, MS 39701
(662) 329-7142
(662) 329-7141 Fax

www.muw.edu

March 3, 2003

Ms. Wanda Stroupe
c/o Dr. Lorraine Gaddis
P. O. Box W-910
Campus

Dear Ms. Stroupe:

I am pleased to inform you that the members of the Committee on Human Subjects in Experimentation have approved your proposed research under the following conditions:

1. Your letter of intent should be expanded and clarified.

2. Informed consents must be received from all parents of the subjects, as well as proper school authorities.

3. It also is recommended, but not required, that you receive teacher permission if teaching time is infringed upon.

4. You are cautioned to hand out the survey to all children, not just those who are visually obese.

I wish you much success in your research.

Sincerely,

Vagn K. Hansen
Provost and Vice President
for Academic Affairs

VH:wr

cc: Mr. Jim Davidson
Dr. Mary Pat Curtis
Ms. Lorraine Gaddis

APPENDIX E

LETTER TO PRINCIPAL AND CONSENT FORM

To: Ms. Bonnie Kemp
Principal, Hills Chapel School

I am a registered nurse and a graduate student in the nurse practitioner program at Mississippi University for Women, Columbus, MS. I am conducting a study as part of my thesis on relationships among lifestyle, self-esteem, and body weight in children. I would like to ask the students at Hills Chapel School, ages 9 to 14, to participate in this study. I am requesting permission to obtain a height and weight on those students who return a signed informed consent. The students who wish to participate in this study will be asked to complete a 10- to 15-minute survey as well. I have attached a copy of the informed consent that will need to be sent home 2 weeks prior to the day of my visit to the school. If the student does not return the informed consent, they will not be asked to complete the survey nor will their height and weight be obtained.

You may contact me at (662) 837-8740 if you have any questions or concerns. I look forward to hearing from you.

Respectfully,

Wanda Stroupe, RNC, BSN
Graduate Student Nurse Practitioner
Mississippi University for Women

Consent of Principal

I understand that Wanda Stroupe, a graduate nursing student at Mississippi University for Women, Columbus, MS, and a registered nurse, will be conducting a research study in my school. I understand that the research will involve the completion of a questionnaire by the children who participate and the collection of height and weight measurements. The questionnaire will ask questions about types of activity the children participate in as well as self-esteem questions. I understand the study will be for children ages 9 to 14 years and that participants will be informed both verbally and in writing that participation in the study is voluntary and their confidentiality will be assured.

Participants will also be informed that their participation or refusal to participate in the study will have no effect on the child's grades or status at school. I understand that participation in the study will require written parental consent.

I understand the above information and give my consent for Wanda Stroupe to conduct the described study in my school.

_____ _____

Signature of Principal Date

_____

Name of School

APPENDIX F

LETTER TO PARENT/GUARDIAN

Dear Parent/Guardian:

I am a registered nurse and a graduate student in the nurse practitioner program at Mississippi University for Women, Columbus, MS. I am conducting a study on the relationship among lifestyle, self-esteem, and body weight in children and adolescents. I am asking the students, ages 9 to 14 years, at Hills Chapel School to participate in this study. They will be asked to complete a survey that will take 10 to 15 minutes, and their height and weight will be obtained. All this will be done privately so that no one has access to the individual information except the researcher. I have attached the informed consent you need to sign giving permission for your child to participate in the study. Please return this to your child's teacher. If you have any questions, you may call me at 837-8740.

Thank you,

Wanda Stroupe, RNC, BSN
Graduate Nurse Practitioner
Mississippi University for Women

APPENDIX G

INFORMED CONSENT

Informed Consent

Title

The Relationship Among Lifestyle, Self-Esteem, and Body Mass Index in Children

Purpose

I am a registered nurse and a graduate student in the nurse practitioner program at Mississippi University for Women. The main objective of this study is to compare the relationship of lifestyle and self-esteem to body weight in children. You were selected to participate in this study because your age is between 9 and 14 years and you are currently a student at Hills Chapel School. There will be approximately 50 participants in this study.

Procedures

If you decide to participate, you will be asked to complete a survey on eating habits, level of activity, and self-esteem. This survey will take 10 to 15 minutes to complete, and your height and weight will be obtained.

Benefits and Risks

You may benefit from participation in this study by becoming more aware of health-promoting lifestyle patterns. It is hoped that this study will contribute information that will lead to a better understanding of the cause and effects of childhood and adolescent obesity. There is no physical risk involved in your participation and any psychological risk is minimal. The major inconvenience will be the time to complete the survey.

Costs

There is no cost for participating in this study and no compensation will be made to study participants.

Confidentiality

Your name will not appear on any questionnaires. Study participants will not be identified in any way in the report of this study. Information will be kept confidential.

Your decision whether or not to participate in this study will not prejudice you or your future with Hills Chapel School. If you decide to participate, you are free to withdraw at any time prior to completing the survey without penalty.

Please feel free to ask any questions you may have about the study or your rights as a research participant. If other questions occur to you later, you may contact Wanda Stroupe, RNC, BSN, Principal Investigator at (662) 837-8740.

You will be provided a copy of this form for your records. You are making a decision whether or not to participate in this study. Your signature indicates that you have read the information provided, understand it, and have decided that you will participate. You may withdraw at any time prior to completing the survey without prejudice after signing this form, should you choose to discontinue participation in this study.

_____	_____
Signature of Parent/Guardian	Date
_____	_____
Signature of Participant	Date
_____	_____
Signature of Investigator	Date